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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,109	10/20/2003	Steven C. Quarre	044182 306426	3736

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EXAMINER

KEASEL, ERIC S

ART UNIT PAPER NUMBER

3754

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,109

Applicant(s)

QUARRE, STEVEN C.

Examiner

Eric Keasel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment to the claims filed on 20 October 2003 does not comply with the requirements of 37 CFR 1.121 because the changes to the claims do not reflect changes to the originally filed claims. For example, in claim 1, the phrase "applies a first force against a diaphragm closing the valve but not creating a seal" is shown as being deleted; however, this phrase does not appear in the originally filed claim 1. To further prosecution, the preliminary amendment, filed 20 October 2003 will be entered and treated; but any future amendment that does not comply with the requirements of 37 CFR 1.121 will be held non-compliant.

Specification

2. The disclosure is objected to because of the following informalities:
- a. On page 1, line 15, and throughout the specification, it appears that "epitaxal" should be --epitaxial--.
 - b. On page 6, line 15, it appears that the punctuation should be changed after the first "diaphragm".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

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art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 7, and 8 have been amended to recite that the plunger positions the diaphragm against the valve seat in the first position and that impact loading on the diaphragm against the valve seat is minimized. However, the originally filed application discloses that the first position has the plunger positioning the diaphragm proximate (i.e. close) to the valve seat and there is no discussion of the impact loading of the diaphragm against the seat being minimized (there is only a brief discussion of the force that the plunger exerts on the diaphragm). This is a new matter rejection.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 7, and 8 have been amended to recite that the plunger positions the diaphragm against the valve seat in the first position and that impact loading on the diaphragm against the valve seat is minimized. However, the originally filed application discloses that the first position has the plunger positioning the diaphragm proximate (i.e. close) to the valve seat and there is no discussion of the impact loading of the diaphragm against the seat being minimized (there is only a brief discussion of the force that the plunger exerts on the diaphragm). It is vague and indefinite as to what is meant by the "first position" in the claims because the specification describes a different "first position". It is also vague and indefinite as to what is considered

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minimized impact loading of the diaphragm against the valve seat because there is no discussion of this in the specification (i.e. what is the impact loading minimized with respect to?).

Claim 4 recites "a valve plunger" in line 1 and "a valve diaphragm" in line 2, which appear to be double inclusions of the plunger and diaphragm in claim 1. It is vague and indefinite as to whether the plunger and diaphragm in claim 4 are meant to be the same plunger and diaphragm from claim 1 or a different and distinct plunger and diaphragm.

7. In light of the above informalities, the claims have been examined as could best be understood by the examiner. The examiner's failure to apply prior art to any of the claims should not be construed as an indication of allowable subject matter.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-11 and 13 (as understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Nickerson et al. (US Patent Number 5,151,178).

In the broadest reasonable interpretation of the claims, any PE-actuated plunger acting against a diaphragm to open and close a valve seat will have first position where the diaphragm is close (or barely touching) the valve seat at a lower force and a more fully closed position at a higher force. Nickerson et al. disclose such a valve (see the embodiments of Figs. 2 or 3). The PE actuator is disclosed in column 5, line 13.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1-11 and 13 (as understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Nickerson et al. in view of Tomatsu et al. (US Patent Number 5,551,480).

If a more limiting interpretation of the claims is used, Nickerson et al. fail to disclose sending signals moving the plunger to a first position at a lower force, then applying a signal corresponding to a second, higher force to squeeze the diaphragm closed. Tomatsu et al. disclose moving a similar plunger to a first position at a minimum driving force to slow the plunger to reduce valve operational noise. Then driving force is increased. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the control signals moving the plunger to a first position at a lower force to reduce valve operational noise and, then applying a signal corresponding to a second, higher force in order ensure valve sealing as taught by Tomatsu et al. (see column 1, line 61 to column 2, line 4).

12. Claim 12 (as understood) is rejected under 35 U.S.C. 103(a) as being unpatentable over Nickerson et al. in view of Tomatsu et al. as applied to claims 7, 8, and 10 above, and further in view of Minoura et al. (US Patent Number 4,726,389).

The modified Nickerson fails to disclose signals moving the plunger to first and second positions at first and second speeds with the first speed faster than the second speed. Minoura et al. disclose closing a valve by linearly moving the valve to a first (almost closed) position at a first speed, moving the valve to a second (fully closed) position at a second speed, with the first speed being faster than the second speed; applying a first signal to an actuator to cause the movement to the first position; and applying a second signal to an actuator to cause the movement to the second position. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the control system of Minoura et al. with the diaphragm valve of the modified Nickerson in order to suppress inertia of the plunger and stabilize the closing characteristics of the valve as taught by Minoura et al. (see abstract, lines 10-13).

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Keasel whose telephone number is (703) 308-6260. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (703) 308-2696. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eric Keasel 15 APR 2004

Eric Keasel
Examiner
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